

## REMARKS

The Official Action rejects Claim 7 under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. In particular, the Official Action alleges that the application does not provide support for “forming a core layer ... with a thickness which satisfies a single mode condition...” In this regard, the Official Action acknowledges that the present application discloses the formation of a single mode channel waveguide, but submits that the only thickness value that is provided by the specification is a value of 8  $\mu\text{m}$ . In order to more clearly defined the claimed invention, Claim 1 has been amended to recite “forming a core layer of a photosensitive composition having a thickness of the core layer which achieves a single-mode optical waveguide that comprises the core layer by a spin-coating method”. Additionally, new dependent Claim 21 has been added which further defines the thickness of the core layer to be one in which the birefringence after photocuring liquid oligomer in the photosensitive composition is reduced to less than  $1 \times 10^{-3}$ . The present application provides support for new dependent Claim 21 at least on page 14, line 22 to page 15, line 5. As described in detail below, it is submitted that amended Claim 7 is supported by the present application, thereby overcoming the only remaining rejection. Based on the foregoing amendments and the following remarks, it is respectfully requested that the application be reconsidered and the amended set of claims allowed.

In contrast to the statement proffered by the Official Action that “there is no support for ‘forming a core layer . . . with a thickness which satisfies this single-mode condition . . .’”, amended Claim 7 recites “forming a core layer of a photosensitive composition having a thickness of the core layer which achieves a single-mode optical waveguide.” As such, amended Claim 7 states that the resulting optical waveguide operates in single-mode which is clearly supported by the present application. Indeed, the Official Action notes that “there is a support for an active step of forming a single-mode channel waveguide.”

The present application also provides other support for the formation of a core layer of a photosensitive composition having a thickness which achieves a single-mode optical waveguide as now set forth by amended Claim 7. In this regard, although the present application does

provide a number of examples in which the core layer has a thickness of 8  $\mu\text{m}$ , these examples are simply that, examples, with the present invention not being limited to this or any other example as set forth on page 26, lines 22-24 of the present application. Indeed, several of the examples in which the core layer has a thickness of 8  $\mu\text{m}$  are described in conjunction with a single-mode channel waveguide (having an 8  $\mu\text{m}$  core). See, for example, Examples 13 and 14 on pages 34 and 35 and Example 24 on page 38. Additionally, page 8, line 4-6 of the present application describes one object of the present invention to be the solution of a problem that occurs when a waveguide is used as a single-mode optical waveguide, thereby further highlighting that the present invention is directed to the development of a single-mode optical waveguide. Further, page 15, lines 2-6 of the present application describes that birefringence of the photocured liquid oligomer can be reduced to less than  $1 \times 10^{-3}$  and the polarization dependence can be reduced to less than the tolerance limit. As known to those skilled in the art, birefringence and polarization dependence are concepts of a single-mode waveguide and are not relevant for multi-mode waveguides.

As exemplified by the foregoing citations to the present application, the present application does describe the formation of a single-mode optical waveguide and, in turn, discloses the formation of a core layer which achieves the single-mode optical waveguide, as set forth by the claimed invention. Accordingly, it is respectfully submitted that amended independent Claim 7 is sufficiently described by the specification such that the rejection under 35 U.S.C. § 112, first paragraph, is therefore overcome.

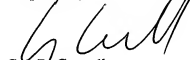
### CONCLUSION

In view of the amendments to Claim 7, the addition of Claim 21 and the foregoing remarks, it is respectfully submitted that the claims are in condition for immediate allowance. It is therefore respectfully requested that a Notice of Allowance be issued. The Examiner is encouraged to contact Applicants' undersigned attorney to resolve any remaining issues in order to expedite examination of the present application.

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Amdt. dated August 31, 2007  
Reply to Official Action of May 31, 2007

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,



Guy R. Gosnell  
Registration No. 34,610

**Customer No. 00826**  
**ALSTON & BIRD LLP**  
Bank of America Plaza  
101 South Tryon Street, Suite 4000  
Charlotte, NC 28280-4000  
Tel Charlotte Office (704) 444-1000  
Fax Charlotte Office (704) 444-1111

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